00-00-0000: docket #11: elkwallow water system index

SHENANDOAH NATIONAL PARK

Docket #11

Elkwallow Water System

I N D E X

PART I - INVESTIGATION

Elkwallow Water System

INDEX

PART I - INVESTIGATION (cont'd.)

16. Final Report, Elkwallow Area by Virginia Division of Mineral Resources, June 2, 1967.

PART II - WATER RIGHTS

00-00-0000: water well completion report for elkwallow area

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

VDMR - 1703
WWCR - 34

MAILING ADDRESS:
Box 3667
Charlottesville, VA 22903

DIVISION OF MINERAL RESOURCES

JAMES L. CALVER, COMMISSIONER

WATER WELL COMPLETION REPORT

OFFICE ADDRESS:
McCormick Road
Charlottesville, Virginia

OWNER: National Park Service (Shenandoah) Mailing Address: Luray, Virginia 22835

TENANT: Elkwallow Area Mailing Address:

DRILLER: Frank W. Martin Drilling Co., Inc. Mailing Address: 5163 Starkey Road Roanoke, Virginia 24014

WELL LOCATION: County Rappahannock Approx. ____ feet ____ miles ____ (direction) of Near Elkwallow Reservoir and ____ feet ____ miles east (direction) of Skyline Drive

(GIVE DIRECTION AND DISTANCE IN FEET OR MILES FROM TWO REFERENCE POINTS - ROADS, TOWNS, RIVERS, ETC. - ON COUNTY HIGHWAY OR OTHER MAP.)

DATE STARTED: 7/15/66 DATE COMPLETED: 7/21/66

TYPE OF DRILL RIG USED: Air Rotary TOTAL DEPTH 363 feet

WATER LEVEL: Stands 44 feet below surface OR

has NATURAL flow of ____ gallons per minute

YIELD TEST: Method Test Pump

Drawdown 258 feet

* Rate 10 gal. per min.

Duration 24 hrs., 30 min.

WATER ZONES: from 70 to 75 feet

from 140 to 145 feet

from ____ to ____ feet

WATER: Color Clear** Taste ____

Odor ____ Temp. ____ °F

WELL TO SUPPLY: (check one) Home ____

Farm ____ Town ____ School ____

Industry ____ Other Wayside Picnic Area

WATER ANALYSIS AVAILABLE: Yes X No ____

DRILL CUTTINGS SAVED: Yes X No ____

(DRILL CUTTINGS SHOULD BE COLLECTED AT 10 FOOT INTERVALS. THESE SAMPLES MAY BE SHIPPED TO THIS OFFICE EXPRESS COLLECT. SAMPLE BAGS ARE FURNISHED FREE OF CHARGE UPON REQUEST.)

HOLE SIZE: 10 inches from 0 to 43 feet

6 inches from 43 to 363 feet

____ inches from ____ to ____ feet

SCREEN SIZE: ____ inches from ____ to ____ feet

____ inches from ____ to ____ feet

____ inches from ____ to ____ feet

CASE SIZE: 6 inches from 0 to 43 feet

____ inches from ____ to ____ feet

____ inches from ____ to ____ feet

GROUTING: Method Poured

Material Cement Depth 41 feet

PUMP: Type Electric Submersible

Capacity 90 gal per min

Depth of intake 338 feet

REMARKS: * Final 11 hours of pump test

** Started pumping cloudy

(LOG OF WELL) OVER

08-16-1966: water well completion report

COMMONWEALTH OF VIRGINIA Contract No. 14-10-0131-1630

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

DIVISION OF MINERAL RESOURCES

JAMES L. CALVER, COMMISSIONER

MAILING ADDRESS: Box 3667, University Sta. Charlottesville, Virginia

OFFICE ADDRESS: McCormick Road Charlottesville, Virginia

WATER WELL COMPLETION REPORT

OWNER: Shenandoah National Park Mailing Address: Luray, Virginia 22835

TENANT: _____ Mailing Address: _____

DRILLER: Frank W. Martin Drilling Co., Inc. Mailing Address: 5163 Starkey Road Roanoke, Va. 24014

WELL LOCATION: County Rappahannock Approx. _____ feet miles _____ (direction) of Rileallow #1 - Near Reservoir and _____ feet miles _____ (direction) of _____

(GIVE DIRECTION AND DISTANCE IN FEET OR MILES FROM TWO REFERENCE POINTS - ROADS, TOWNS, RIVERS, ETC. - ON COUNTY HIGHWAY OR OTHER MAP.)

DATE STARTED: 7-15-66 DATE COMPLETED: 7-21-66

TYPE OF DRILL RIG USED: Air Rotary TOTAL DEPTH 363 feet

WATER LEVEL: Stands 48 feet below surface OR

has NATURAL flow of _____ gallons per minute.

YIELD TEST: Method Pump

Drawdown 252 feet

Rate 10 gal. per min.

Duration 24 hrs., 0 min.

WATER ZONES: from 70 to 75 feet

from 140 to 145 feet

from _____ to _____ feet

WATER: Color Clear Taste _____

Odor _____ Temp. _____ °F

WELL TO SUPPLY: (check one) Home _____

Farm _____ Town _____ School _____

Industry _____ Other Wayside

WATER ANALYSIS AVAILABLE: Yes X No _____

DRILL CUTTINGS SAVED: Yes X No _____

HOLE SIZE: 10 inches from 0 to 43 feet

6 inches from 43 to 363 feet

_____ inches from _____ to _____ feet

SCREEN SIZE: _____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

CASE SIZE: 6 inches from 0 to 43 feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

GROUTING: Method Poured

Material Cement Depth 41 feet

PUMP: Type Elec. Sub.

Capacity 90 gal per min

Depth of intake 338 feet

(DRILL CUTTINGS SHOULD BE COLLECTED AT 10 FOOT INTERVALS. THESE SAMPLES MAY BE SHIPPED TO THIS OFFICE EXPRESS COLLECT. SAMPLE BAGS ARE FURNISHED FREE OF CHARGE UPON REQUEST.)

REMARKS: Started pumping cloudy

LOG

FURNISHED BY Frank W. Martin Drilling Co., Inc. DATE August 16, 1966

DEPTH (feet) FROM	DEPTH (feet) TO	TYPE OF ROCK OR SOIL PENETRATED (gravel, clay, etc., hardness, color, etc.)	REMARKS (water, caving, shot, screen, sample, etc.)
0	35	Dirt and Boulders	
35	80	Greenstone Mixed Color	
80	90	Brown	
90	95	Deep Red	
95	115	Greenstone	
115	125	Pink and Green	
125	235	Green	
235	260	Green and Pink	
260	363	Green mixed with color	

(Use additional forms if necessary)

Land History

Form 10-559
(Nov. 1958)

FIXED PROPERTY ID [illegible]

DESCRIPTION OF PROPERTY (Include reference to the location within the Park, how the asset was acquired, name of contractor, etc.)

Location: Elkwallow Wayside and Picnic Grounds * North District

One Spring and Collection Box
One 20,000 Gallon Concrete Reservoir
5,450 Linear Feet of Pipe
Six Stone Masonry Drinking Fountains
One Fire Hydrant

Gravity System

Constructed by CCC in 1939
Rehabilited by NPS in 1958

Line	DATE	REFERENCE		QUANTITY			COST		
		Journal Vou.	Other	Unit	No. of Units	Accumulated Total	Direct Costs	Indirect Costs	Accumulated Costs
1	8/27/59	37-10		System	1				7,800.00
2	1/19/59	37-60				1	3,293.27	505.19	11,598.46
3									
4									
5									

G.L. Acct. No.	General Classification	Sub-Classification	Region	State	Park or Office
100.8	Utility	Water System	One	Va.	SNP

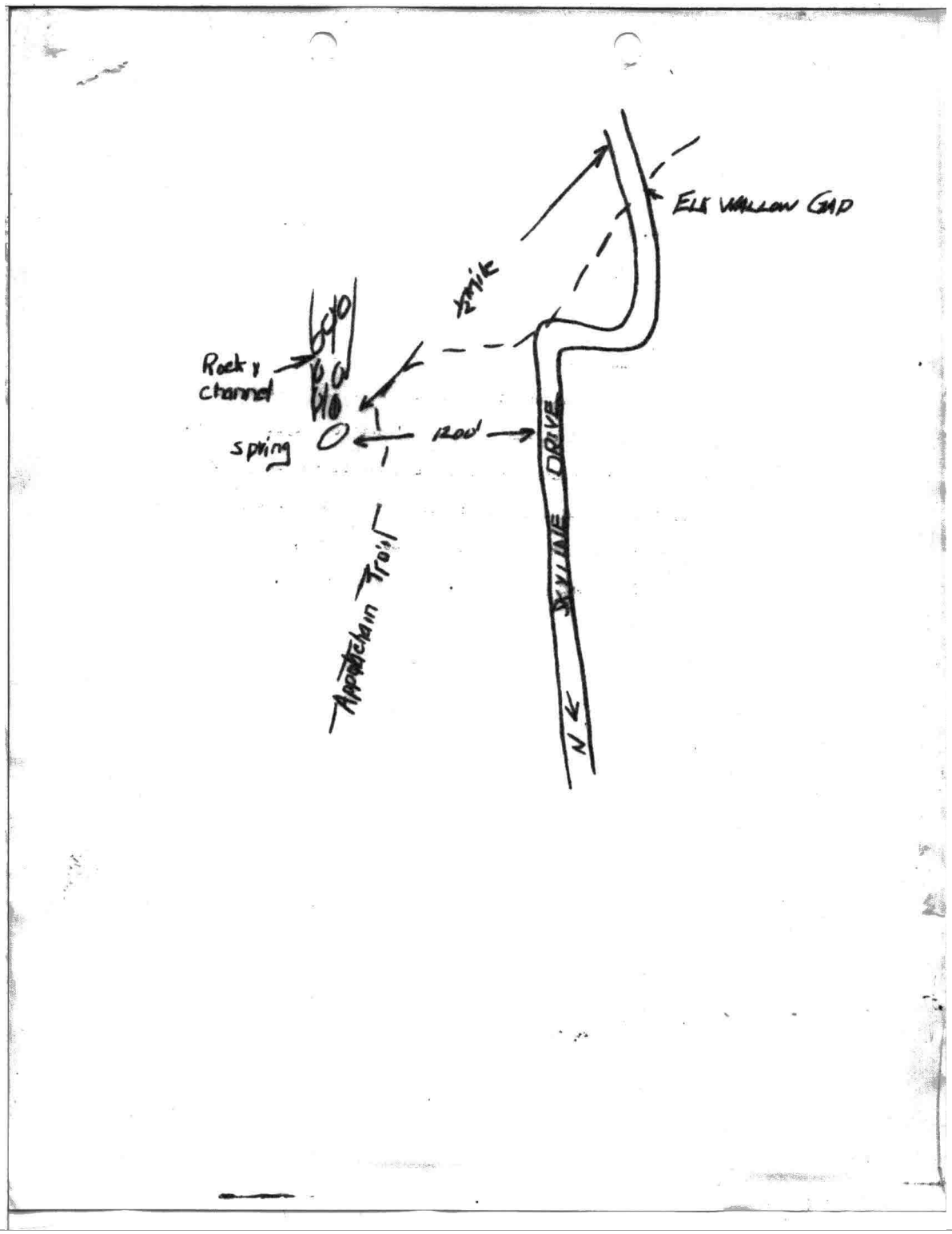
Supporting Hydro Data

Spring No. 51. October 8, 1934

Spring has no name.

Is located about ¼ mile north of Elk Wallow Gap on Appalachian Trail and about 1800' east of Skyline Drive. Water comes out beneath some large boulders and only part of its flow can be seen as it flows down a very rocky channel, on this account the flow could not be measured, is estimated at about 2 gallons per minute. Temperature 57°.

8



Other Supporting Information

Shenandoah National Park
ELKWALLOW AREA
Final Report

National Park Service
Contract No. 14-10-1-134-2

HISTORY

At the request of Superintendent R. T. Hoskins, a field investigation was conducted in November 1965 for possible sources of water for the Elkwallow Area and any future developments in the immediate vicinity. As no suitable springs are available within one mile of the Wayside, two test-hole drilling sites were recommended (Preliminary Report dated April 14, 1966). It was determined by Park officials that these sites were too far from the developed area for economic consideration, and alternate sites were requested. Although any new sites would be less favorable than the original ones, two alternate drilling sites were recommended by letter to E. Eubanks on May 12, 1966.

TEST-HOLE DRILLING AND EVALUATION

The Frank W. Martin Drilling Company of Roanoke, Virginia began drilling Test-Hole No. 1 on July 15, 1966 at Alternate Site No. 2. The principle rock types, penetrated beneath an overburden 45-feet thick, were basalts of the Catoctin Formation. Water was encountered in fractured rock from 70 to 75 and 140 to 145 feet below ground level, and drilling was terminated at a depth of 363 feet. The test hole was completed on July 21, 1966 after it had been reamed, cased, and grouted. A second test hole was not drilled because the present water needs were fulfilled from Test-Hole No. 1. It should be noted that there is some inconsistancy in the depths of reaming, grouting and casing as reported by the driller on the completion report form he submitted.

A pump test was conducted on July 27 and 28, 1966 using an electric submersible pump set at a depth of 338 feet, and 10 gallons per minute were discharged continuously for the final period of 11 hours from a constant pumping level of 298 feet. It is indicated by this pump test that the yield obtained will probably be available for extended periods of pumping, even during the dry seasons. Water samples were collected near the end of the pump-test period and analysed by Froehling and Robertson, Inc., Richmond, Virginia. The following results of their analysis (P. O. No. 134-161, dated 9/15/66) show that, aside from a relatively high iron content, the water is of excellent chemical quality:

(in parts per million, except for pH)

pH	8.2	Silica	3.5
Total Solids	67.0	Iron	0.35
Ignition Loss	17.0	Calcium	9.5
Mineral Residue	50.0	Magnesium	2.4
Free Carbon Dioxide	0.0	Sodium & Potassium	6.9
Phenolphthalein Alk.	4.0	Barcarbonate	39.0
Methyl Orange Alk.	32.0	Carbonate	2.4
Total Hardness	33.6	Chloride	4.0
Manganese	0.01	Sulfate	7.2
Fluoride	NIL	Nitrate	0.3

RECOMMENDATIONS

Small to moderate yields (5 to 20 gallons per minute) should be available from other wells in the area if they are located to intercept deep fracture zones: ground water encountered at depths less than 100 feet should be cased off because they may not be perennial, sanitary supplies. The recommendations for two test-holes furnished in the Preliminary Report, and the later-suggested Alternate Site No. 1, are in no way altered as result of the completion of Test-Hole No. 1 at

Alternate Site No. 2. The attached Water Well Completion Report form, drillers log, geologic log, and Pump Test data sheets contain information that will be helpful in any future water-well drilling operations in the Elkwallow Area. These data are also on file at the Virginia Division of Mineral Resources, and the sample drill cuttings have been placed in the permanent well-sample repository.

Virginia Division of Mineral Resources
Charlottesville, Virginia
June 2, 1967

09-28-1967: letter regarding well log reports

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
1100 Ohio Drive, S.W.
Washington, D. C. 20242

REFER TO: D5031

SEP 28 1967

SEP 3 2 1967

Mr. Jackson E. Price
Regional Director
Southeast Regional Office
National Park Service
Federal Building, Box 10008
400 North Eighth Street
Richmond, Virginia 23240

Dear Mr. Price:

Mr. Dykesterhouse in our Charlottesville Regional Office has forwarded to us for our comments well log reports for several wells in Shenandoah National Park.

These reports and water use needs were discussed with Superintendent Hoskins. Our comments are listed below:

Corners Deadening Area - A new well was drilled in this area. A pump test indicated a yield of 28 gallons per minute. Examination of the chemical analysis indicates a satisfactory water.

Since this area is in a proposed wilderness area, there are no plans for developing facilities in this area at this time.

Dickey Ridge Area - This area contains a large visitor center, 30 site picnic area, and five houses. These facilities will require a considerable amount of water.

Test hole no. 3 - was drilled near the Fox Hollow weir. A pump test showed a final discharge of only two gallons per minute. This volume would not be adequate.

Test hole no. 4 - was drilled 600 feet north-northeast of test hole no. 3. This was a dry hole.

Test hole no. 5 - was drilled 10 feet from test hold no. 1 to a depth of 650 feet. The pump test indicated a flow of 35 gallons per minute for 28 hours, however, the recovery rate was only 2.5 gallons per minute. A study of the draw down curve indicates that this well

should not be pumped at a rate higher than 10 gallons per minute. The chemical analysis indicates that this is not a hard water and has a low iron content. The use of a large storage tank (100,000 gallons) with long pumping periods at a low rate should provide a adequate amount of high quality water.

Rockfish Gap - The area contains an entrance station with four employees. A small rest room and drinking fountain are located in this area.

Rockfish Gap well no. 1 was drilled about 200 yards north of the entrance station to a depth of 535 feet. The 6 inch diameter casing was grouted to 30.4 feet. A pump test for 19 hours produced 2 to 4 gallons per minute. Three gallons per minute was stabilized for five hours.

A chemical analysis of the water indicates a soft water with a nearly netural pH. The iron content is high enough to stain white fixtures and produce a metallic taste but should be palatable enough for drinking purposes.

With a suitable storage tank this well should produce a sufficient quantity of palatable water for this area.

Simmons Gap - This area will contain a submaintenance station with about 30 men, a trailer and one resident home.

A well was drilled to 205 foot depth. A 6 inch casing was grouted to a depth of 43 feet. After test pumping 25 gallons per minute for 21-2/3 hours, the water level remained at 113 feet.

A chemical analysis of this water indicates a soft water, with about 50 ppm alkalinity. Iron is very low. This water is suitably balanced and should be non-corrosive, good for laundry and general use and have a pleasing taste. This well should provide a satisfactory quantity of good tasting water.

Elkwallow Area - This area has a 50 site picnic area, a gift shop, and ~~two~~ comfort stations.

A well was drilled to a depth of 363 feet. The well was cased with 6 inch diameter pipe and grouted to depth of 41 feet. A pump test at

10 gallons per minute was run for 11 hours with the water level remaining at 298 feet. This well should produce 10 gallons per minute for an extended period of time.

A chemical test indicated that this is a soft water, non-corrosive well, but does contain enough iron to stain fixtures and produce some metallic taste.

With a suitable storage tank, this well should produce a sufficient quantity of water but will not be as high quality as the Simmons Gap well.

If the presence of iron in some of the well water causes a problem at some later date, iron removal filters, or high chlorine dosages may be necessary to eliminate this problem.

If you have any further questions regarding these well supplies, feel free to call on us.

Sincerely yours,

John H. McCutchen

John H. McCutchen
Sanitary Engineer Consultant

Shenandoah National Park
ELKWALLOW AREA
Preliminary Report

Contract No. 14-10-0137-0185

In accordance with item 1d of Contract No. 14-10-0137-0185 this Division was requested by letter (R. T. Hoskins, Superintendent, October 26, 1965) to add the Elkwallow Area to those areas already designated for study in the current contract. The necessary field investigations for geologic mapping and the occurrence of springs within a 1-mile radius of Milepost 23.5 were completed during November 1965.

Geology and Hydrology

Although a number of wet-weather seeps were noted, no perennial springs were observed within a reasonable distance or elevation of the Wayside installation. Accordingly, the investigations were continued for the location of test-hole drilling sites. The area on each side of Skyline Drive near Milepost 23.5 is underlain by fine-grained metamorphosed basalt of the Catoctin Formation that has relatively good cleavage that dips to the southeast. Because these rocks have very little primary permeability it will be necessary to locate permeable zones of secondary origin interconnected with an adequate source of recharge to obtain a sufficient supply of ground water. As the recharge conditions in the area studied are limited, only small amounts of ground water can be anticipated. However, as the water requirements are relatively small, it is possible that a test hole can later be developed into a satisfactory water well.

The portion of the Area on the east side of Skyline Drive was studied in greater detail because electric power is more accessible on that side. Surface drainage in this area is restricted mostly to two parallel hollows

that trend in a north-south direction. A test-drilling area has been selected in the more easterly of these hollows on the basis of rock structure and potential subsurface recharge.

Test-hole Recommendations

Approximately 3600 feet east of the present storage area the power line crosses a creek. Test hole No. 1 should be drilled on the north side of the power line at this location, on the east side of the creek as depicted by the tip of arrow 1 on the attached copy of an aerial photograph. Test-hole site No. 2 is located 1900 feet south of test-hole site No. 1, on the east side of the creek, as depicted by the tip of arrow 2.

Drill holes at each of these sites will first penetrate 15 to 30 feet of overburden and then enter and remain in the Catoctin Formation. The maximum recommended drilling depth at each site is 350 feet unless a zone of broken rocks is encountered at a depth greater than 300 feet. In such a case drilling should be continued for a distance of at least 50 feet below the deepest fracture penetrated.

Virginia Division of Mineral Resources
Charlottesville, Virginia
April 14, 1966

08-19-1966: unit price contract for contract no. 14-10-0131-1630

-194
9/6C)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Shenandoah National Park
(Park)

Check One:
Monthly Estimate ☐
Final Estimate ☒

UNIT PRICE CONTRACT

ESTIMATE NO.	FOR (Period)	DATE
1	June 27, 1966 - July 22, 1966	August 19, 1966
CONTRACT NO. 14-10-0131-1630	COMPLETION DATE	EXTENDED DATE
CONTRACTOR		ORIGINAL CONTRACT $
PROJECT		CHANGE ORDERS* $
LOCATION		TOTAL CONTRACT $

ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
4.	96 hours	Pump test for minimum of 24 hours per production well:			
		Big Meadows Well No. 1	26 hours	14.50/hr	377.00
		Big Meadows Well No. 2	24 "	"	348.00
		Simmons Gap Well	24 "	"	348.00
		Elkwallow Well	24 "	"	348.00
		Total Item 4	98 hours	14.50/hr	1,421.00
5.	3 Moves	Moving equipment from one test well site to another well site	3 moves	$60/move	180.00

RECOMMENDED (Project Supervisor)
Jerry A. Eubanks
Jerry A. Eubanks, Chief of Park Maintenance

APPROVED (Contracting Officer)
B. Taylor Hawkins
B. Taylor Hawkins, Superintendent
DATE 8-22-66

SUMMARY	
TOTAL TO DATE	$ 1,309.70
LESS RETAINED AMOUNT	0.00
NET	1,309.70
LESS PREVIOUS PAYMENTS	0.00
LESS LIQUIDATED DAMAGES	0.00
DUE THIS ESTIMATE	1,309.70
% COMPLETED TO DATE:	100%

*Show Breakdown on Reverse

(See Reverse for Distribution)

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
SHENANDOAH NATIONAL PARK
LURAY, VIRGINIA

File Reference:
D5039

OFFICE OF
THE SUPERINTENDENT

REGION ONE
NOV 27 1953

Reg. Dir.	
Asst. Reg. Dir.-Adm.	
Asst. Reg. Dir.-Oper.	
Asst. Reg. Dir.-Plan.	
Adm. Officer	
Land Arch.	
Architecture	
Engineering	4/27
Programs	
History	
Archeology	
Soil Conserv.	
Forestry	
Concessions	
Land and Rec.	
Kramer	11/30
Sweeny	

November 24, 1953

Memorandum

To: Regional Director, Region One

From: Superintendent, Shenandoah NP

Subject: Contamination Water Supply - Elkwallow Shelter Spring

This is in reply to Acting Regional Engineer Sweeny's memorandum of October 2 requesting us to report on the contamination of the Elkwallow Shelter Spring and the remedial action taken.

As you know, the following sign has long been posted at the open shelter springs, including the one at Elkwallow: "This is an unprotected water supply. Recommend boiling or use of purification tablets. - Park Superintendent". Accordingly, samples from such springs have not been regularly collected.

As we were not entirely satisfied with the above arrangement, we recently endeavored to improve the condition at Elkwallow by construction of a spring box where only an open pool existed before. If the spring box proves to be suitable in this case, it is our intention to improve the situation similarly at the other open springs as funds permit. The sample was collected for our own information to ascertain if the water was now potable, but the warning sign is still in place. We are hopeful that in normal years when the spring is running at average flow, the water will be free of contamination and the sign may be removed.

It is hoped that the above information will serve as the report requested by Mr. Sweeny.

Guy D. Edwards
Superintendent

In duplicate

WATER SYSTEMS - SHENANDOAH NATIONAL PARK Dec. 1939

General

Water supply systems have been developed in fifteen separate areas in Shenandoah National Park. Additional systems will be required as new areas are opened and the Skyline Drive is extended. Some of these are little more than a developed spring, a drinking fountain and connection pipe line.

Where practical, gravity supply systems are developed and at other points pumping plants are installed. The present system may be classified as follows:

Group	Gravity Supply		Pumped Supply
		Serving Park Operator, Public and Government.	
1	Panorama		Skyland
	Swift Run Gap		Big Meadows
	[redacted]		
	Dickey Ridge		
		Serving Public & Government only.	
2	Sexton Knoll		Lewis Mountain
	Hased Mountain		
	Hughes River Gap		
	Naked Creek Parking Area		
	Bald Face Mountain		
	South River Picnic Grounds		
	Pass Mountain		
	Clear Spring		

Charge for Water Service

This report deals with the water systems which jointly serve the National Park Service and the park operators (Group 1) where the cost of water service furnished is prorated on the basis of use.

Cost and utilization information has been estimated based upon limited data accumulated over the period November 1, 1938 — November 30, 1939. As more complete data is obtained any necessary change in the rates can be made. Most of these installations have been equipped with water meters for measuring the output of the system and the individual consumption.

At certain developed areas where the park operator conducts operations and where park visitors, other than patrons of the park operator, assemble, the

Water System - Operating Costs - Shenandoah National Park. December 1939.

Reference W-1.

Location of System:	Panorama		Skyland		Big Meadows		Swift Run Gap		Elk Wallow		Dickey Ridge		Total			
	Inv.	Depr.	Inv.	Depr.	Inv.	Depr.	Inv.	Depr.	Inv.	Depr.	Inv.	Depr.	Inv.	Depr.	%	Unit Charges Per M.Gal.
Investment (Ref-W-2)	$4,055		$15,950		$17,550		$1,445		$5,160		$19,187		$61,347			
Depreciation Rate																
10%			615	182	1,510	151										
5%	595	30	1,440	72	1,420	71	680	34	3,420	171	252	12				
2½%	1,200	25	6,780	170	10,505	262	70	2			17,405	435		1,886	45½%	10¢
2%	2,260	45	4,115	82	4,115	82	695	14	1,740	35	1,550	31				
		100		486		566		50		206		478				
Annual Operating Costs																
Electric Energy				324		590								914	21%	5¢
Repairs		25		100		100		20		50		75		370	8½%	2¢
Labor		25		500		500		20		50		75		1,170	27%	6¢
Total Annual Costs		150		1,410		1,756		90		306		628		4,340	100%	23¢
Annual Water Output M. Gal.	2,500			4,500		8,000		1,500		1,000		1,500	18,800			

Average Unit Cost - $\frac{\$4,340}{18,800}$ - $0.23 per M. Gal.

Form No. 10-352
(May 1937)

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
EMERGENCY ACTIVITIES

Symbol No. NP-10

C C C [redacted] COMPLETION RECORD

Region One State Virginia Area Shenandoah National Park

Name of job Drinking Fountains Form 7 No. 141 Job No. 97

Location of job Elkwallow Picnic Ground Master plan No. _____ Working plan No. NP-SNP-1186

BLOCK A—PROPOSED WORK

NUMBER OF PERIODS REQUIRED TO COMPLETE JOB	WORK CONTEMPLATED: UNIT	NUMBER UNITS	MAN-DAYS [redacted]	ESTIMATED COSTS: LABOR	MATERIALS	EQUIPMENT	TOTAL
Previously approved	No.	8	275		75.00		75.00
Original or additional request							
TOTAL	XXXX	8	275		75.00		75.00

BLOCK B—LABOR SUMMARY

TYPE OF LABOR	UNSKILLED	INTERMEDIATE	SKILLED	PROFESSIONAL AND TECHNICAL	TOTAL
Number of man-hours					
Cost of labor					

Submitted by James R. Lassiter Title Superintendent Date November 17, 1939

BLOCK C—CLEARANCE

PARK AUTHORITY	DATE	PROCUREMENT OFFICER	DATE	INSPECTOR	DATE

BLOCK D—COMPLETION RECORD

WORK ACCOMPLISHED: DATE OF COMPLETION	UNIT	NUMBER UNITS	MAN-DAYS [redacted]	TOTAL ENCUMBRANCES COMPLETED JOB: LABOR	MATERIALS	EQUIPMENT	TOTAL	BALANCE
June, 1939	No.	5	179		$46.66		$46.66	$28.34

Approved by _____ Title _____ Date _____ Release date _____

(JUSTIFICATION ON BACK OF SHEET)

U. S. GOVERNMENT PRINTING OFFICE 0—9981

These fountains are now completed and in use at Elkwallow Picnic Ground and it is no longer necessary to hold this job open.

Although it was anticipated that eight fountains might be necessary for this area it was decided later five would be sufficient to serve the various picnic sites.

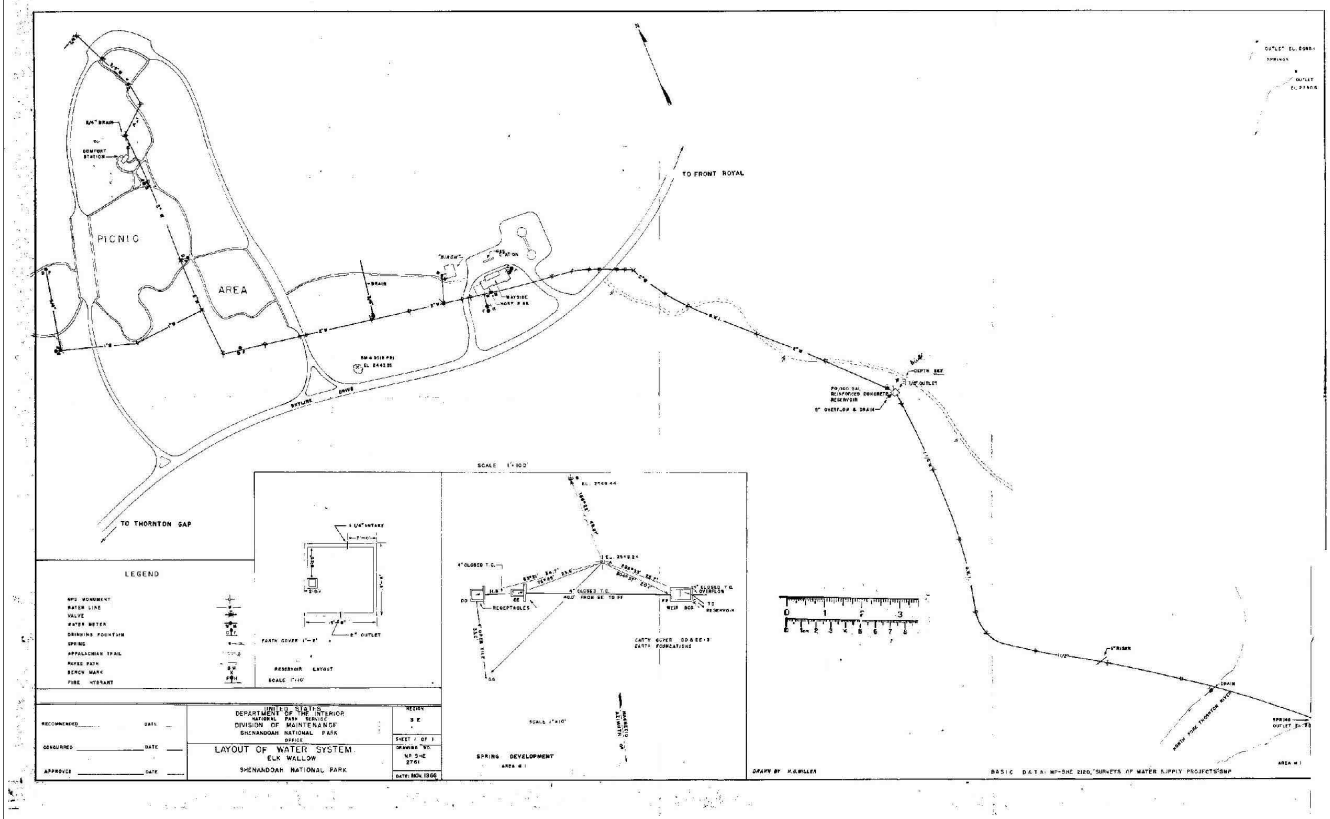
Water System-Shenandoah National Park

Reference W-2 Investment May 1938

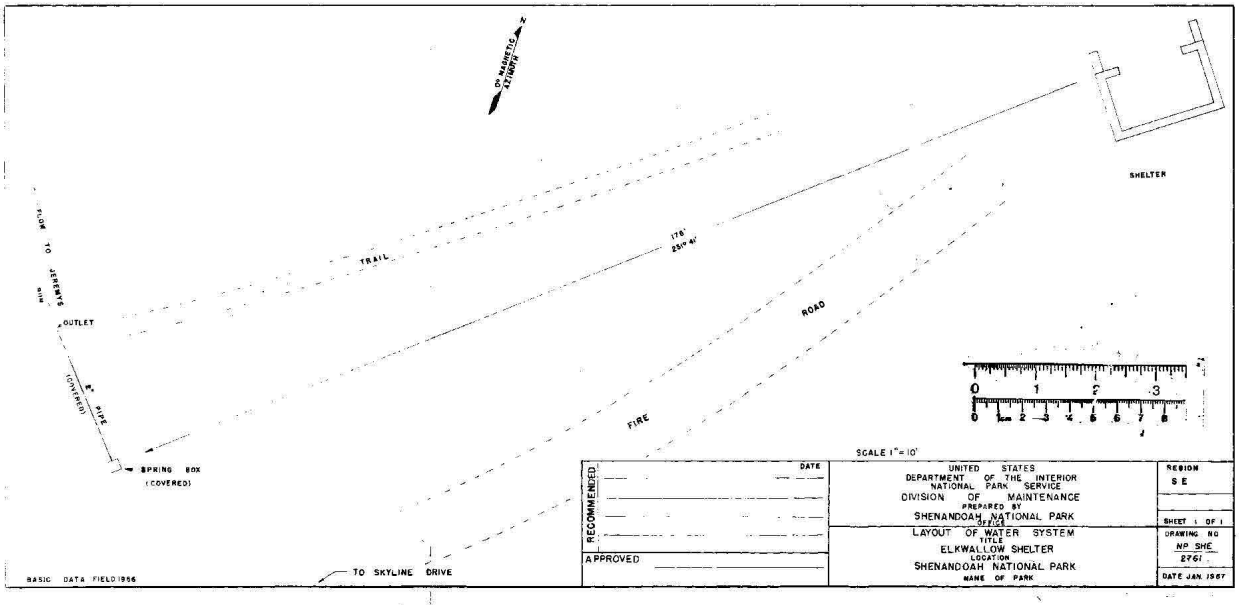
Elkwallow- 1936-37

20,000 gal. concrete tank 18'x18'x9'		$900.00	
Spring development- 5 springs		840.00	
2700 ft.-2'' galv. W.I. pipe @ $.61	$1,645.00		
1650 ft. 1½" " " " @ .55	908.00		
500 ft. 1" " " " @ .45	225.00		
800 ft.-3/4" " " " @ .39	312.00	3,090.00	
Drinking fountains 6 @ $55		330.00	$5,160.

11-00-1966: layout of the water system - elk wallow



SHEN MAP 603
0011 Map misc
Scale Required



Docket Information

Number of Documents in Docket 25

Documents Dated from 10/15/1934 to 9/28/1967

Docket Compiled: 6/17/2011